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Lamb wind-chill estimates and lamb mortality in the Pwllpeiran EHF flock in 1985

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Summary

In the relatively mild spring lambing season at Pwllpeiran Experimental Husbandry Farm (300 m asl) no correlation was found between mortality in neo-natal lambs (born inside housing and put out or born outside) and the wind-chill calculated for the 12 hours prior to death.

Introduction

Starr (1984) described an operational lamb wind-chill forecasting system based on lowland lamb mortaility data over several relatively severe spring lambing seasons. The system may not be readily applicable to the more hardy hill flocks however.

A study was made therefore of the detailed data on mortality of very young lambs (a few hours old) available for the MAFF Welsh hill farm at Pwllpeiran; deaths of lambs born in house and put out could be distinguished from deaths in lambs born outside . Detailed (retrospective) calculations of the 1985 wind-chill data for the Pwllpeiran area were carried out at Cardiff Weather Centre using 'actual' weather.

The mortality data enabled deaths to be tabulated against the lamb wind-chill. Practically all deaths could be detailed as occurring overnight, since 2000 hours and 0800 hours inspections were carried out by farm staff. Accordingly overnight (12 hour) wind-chill was extracted to correlate with lamb deaths. Table 1 presents the tabulated data for the Blaenmyherin flock at Pwllpeiran.

The overnight wind-chill factor represents an integrated heat loss (in arbitary units) from a lamb over the period 20.00 to 08.00 due to the combined influences of temperature, wind and (particularly) rainfall. A rough indication of the danger level to lambs will be as follows:

Factor	Comment
> 45	Critical
40 - 44	Danger
35 - 39	Warning
< 35	Little danger

Table 1

Blaenmyherin Flock 1985

Date	Wind-chill overnight	Deaths born outside	Deaths born inside
March 23	51		1
24	40		1
25	30	3	3
26	30		
27	30	1	1
28	30		3
29	36		2
30	48		1
31	32	1	1
April 1	51	3	1
2	39	2	
3	39	2	
4	30		1
5	33	3	4
6	30	2	2
7	33	1	1
8	42	2	
9	30		2
10	30		1
11	42	1	1
12	35		2
13	33	1	2
14	46		1
15	30		
16	30	2	
17	30	1	1
18	30		
19	30		
20	33		
21	34	1	
22	32		
23	31		1
24	30		
25	30	1	
26	31		
27	33		
28	30		
29	42		
30	30	1	
May 1	38	1	
2	38		
3	30		
4	30		
5	36		
6	31		
7	30		
8	30		
9	31		
10	30		
11	30	1	
		30	33

Table 2

Warning category	Little danger	Warning	Danger	Critical	
12-hour wind-chill	30-34	35-39	40-44	45-49	50-54
Days in range	36	7	4	2	2
Lambing Outside					
Observed deaths	20	4	3	0	3
Expected deaths	21.1	4.1	2.4	1.2	1.2
Lambing Inside					
Observed deaths	23	4	2	2	2
Expected deaths	23.3	4.5	2.6	1.3	1.3

The 'Chi-squared' test with 4 degrees of freedom on each table gives no significant relationship between stressful days and deaths either for outside or inside lambing.

Conclusions:

Of the 51 (nights) during which very young lambs were out in the field, 43 were classified as 'non-stressful', only 4 having a 'severe-stress' category. The losses were not large and although the few deaths occurring on the severe-stress days were marginally more than 'expected', statistically there was no bias at all taken over the season.

In a mild lambing season the dominant factor in hill lamb mortality, apart from disease and foxes, will be the state of health of the ewe (ie her ability to supply milk) and her mothering ability. The influence of extended periods of really stressful weather on the hill lamb remains to be established.

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References

Starr J R (1984). Operational forecasting of a wind-chill factor for young lowland lambs.

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Please address any comments or suggestions to the author.

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Wind-chill/lamb mortality.

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